

Lab 10

Insertion Sort

Objective:

Write a program that takes in any user defined number values and then performs insertion sort resulting in an array of values in ascending order.

- First the user must input how many values they are entering
- Next the user enters that many values, which populates an array of the size previously entered.
- Using TWO arrays then perform insertion sort
 - The first array stays unsorted
 - The second array is sorted
- Pseudo-code for insertion sort

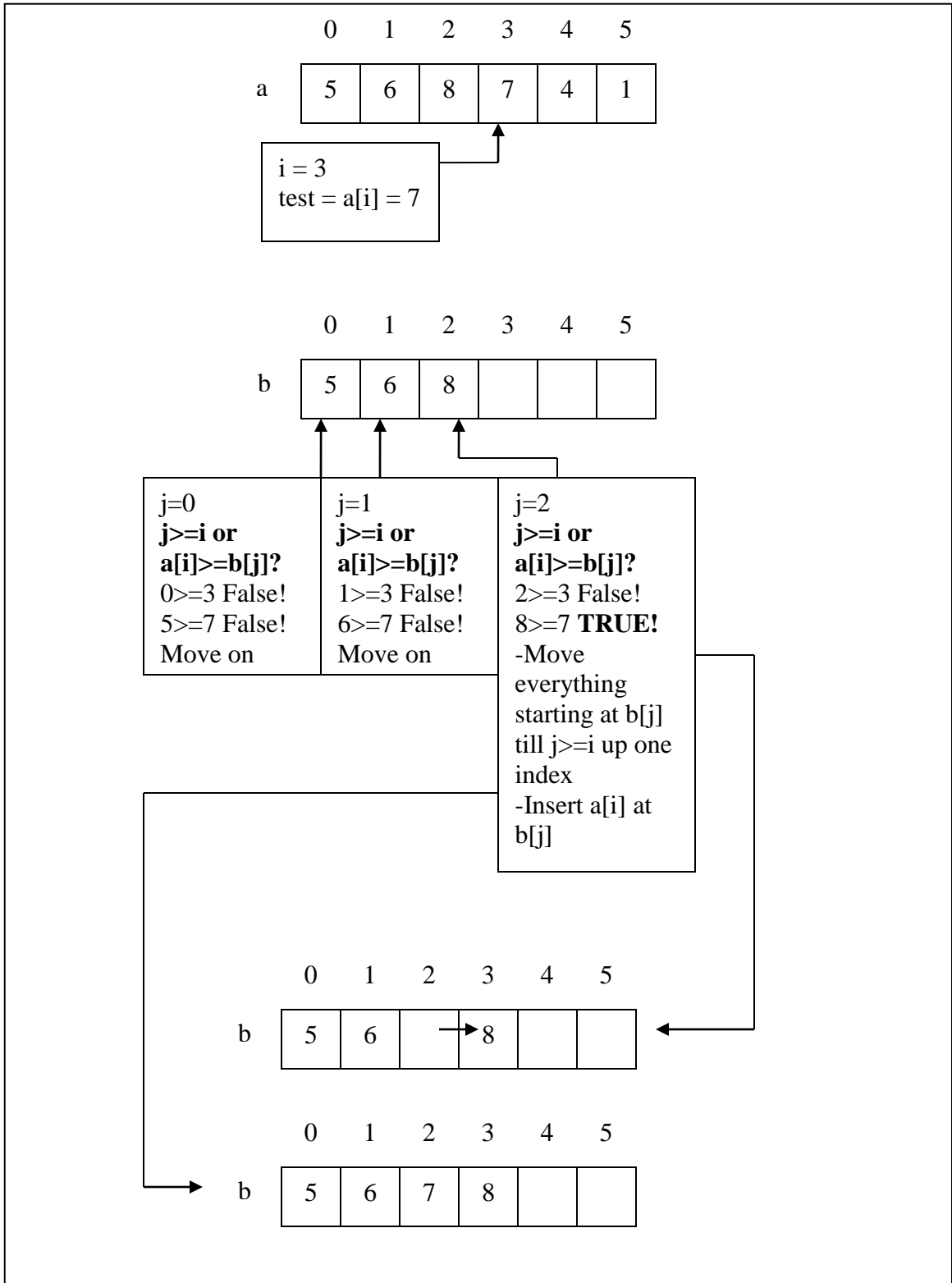
// a is the first array

for(index = 0; index < a.length-1; index++)

 put the value of index a[index] into the second array in the correctly sorted position

 (IE the values at a lower index are less than the value. The values at a higher index are greater than the value.)

- When inserting a number in the middle of the array all other numbers ahead of it must be shifted forward
 - HINT: Start from the back and pull the values forward



- Print both the sorted and unsorted arrays

Example Dialog:

Welcome to the insertion sorter

Please enter the number of values you would like to sort

6

Please enter the number at 0

5

Please enter the number at 1

6

Please enter the number at 2

8

Please enter the number at 3

7

Please enter the number at 4

4

Please enter the number at 5

1

The unsorted array is

5 6 8 7 4 1

The sorted array is

1 4 5 6 7 8

Done!

Finally:

Upload the .java file to the dropbox under Lab10

Additional Questions for the Lab Report

1. Could insertion sort be implemented using only one array?
2. Given this array demonstrate each step of insertion sort as described in the lab.

Use two arrays.

Index	0	1	2	3	4
Value	6	5	2	1	3

